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ipulated. Professor Putnam, while correcting the misconceptions of early writers, pays a just tribute to their zeal, and rejoices that we are now able to see with clearer eyes than those who lived in the days when nearly every fact observed was thought worthless unless it could be immediately accounted for, and the unknown became intelligible by the application of the power of the imagination.

HUMAN PROPORTION.—Dr. Robert Fletcher delivered a lecture in the National Museum, last spring, on Human Proportion in Art and Anthropometry, which is published by Moses King, of Cambridge, Mass. This lecture was an outline of the various schemes of human proportion devised by artists and anatomists, with some account of the process by actual measurement which is now carried on under the name of anthropometry. The cubit or forearm (whence ell, from *ulna*) is the most ancient measure known. The foot was first employed as a measure in Greece. Other bodily measures came subsequently into use, such as the span, pace, yard (Saxon *gyrdan*, to girdle), fathom (Saxon *fadhm*, to embrace). From the earliest periods sculptors, painters, anatomists and geometricians have exerted surprising ingenuity in devising schemes of human proportion, and to these schemes we are indebted for the preservation of ethnic characteristics. Dr. Fletcher has collected the literature of these systems, and the lecture was illustrated by diagrams showing the various geometric processes followed, in all of which there is supposed to be some occult relation to all dimensions of the body, of some one special part, or that, given the dimensions of a part, the remaining dimensions could all be educed from a geometric diagram. Now anthropometry measures the living individuals by the scores, the hundreds, the thousands, and from an immense mass of measurements obtains the mean. Art and anthropometry, therefore, are to some extent antagonistic. Art seeks for the beautiful and idealizes; anthropometry seeks for the real and measures. Dr. Fletcher has added to his very interesting lecture five pages of bibliography, and refers to page 441 of the first volume of the Index Catalogue of the Library of the Surgeon General's office for a copious bibliography of anthropometry.

MICROSCOPY.[1]

TREATMENT OF PELAGIC FISH EGGS.—The transparent eggs of various Teleostei found floating on the surface of the sea present unusual difficulties in the way of hardening. I have had recourse to all the fluids commonly used for this purpose, and have failed to find any satisfactory method of hardening the yelk. Even the germinal disk cannot be well preserved by any of the ordinary hardening agents. Kleinenberg's picro-sulphuric acid, for instance, causes the cells, all through the cleavage stages as well as the later embryonic stages, to swell and in many cases to become completely disorganized. The embryonic stages can be hardened in chromic acid (one per cent), but the yelk contracts considerably without becoming well hardened even after three days' immersion.

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[1] Edited by Dr. C. O. WHITMAN, Newton Highlands, Mass.

All sorts of wrinkles and distortions are caused when the ova are transferred from the acid to alcohol. My best results have been obtained with osmic acid and a modified form of Meckel's fluid. This fluid, as used by Dr. Eisig, consists of chromic acid (¼ per cent) and platinum chloride (¼ per cent) mixed in equal parts. Thus prepared it causes maceration of the embryonic portion of the egg. By using a stronger chromic acid (1 per cent) and combining it as before with the same quantity of platinum chloride (¼ per cent), everything may be well preserved and hardened except the yelk. Before transferring to alcohol, after one to two days' immersion in this fluid, it is necessary to prick the egg membrane in order that the alcohol may reach the egg readily, otherwise the membrane wrinkles badly and often injures the embryo.

For the cleavage stages this fluid cannot be used with success unless the egg has been first killed by another agent; for eggs placed in this fluid continue to live for a considerable time, and may even pass through one or two stages of cleavage. It is therefore necessary to use some agent that kills almost instantly. For this purpose I have found osmic acid the best reagent. The eggs are placed in a watch glass with a few drops of sea water, and then a quantity of osmic acid (½ per cent) equal to that of the sea water is added. After 5–10 minutes the eggs are transferred to the mixture of chromic acid and platinum chloride, and left for twenty-four hours or more. This fluid not only arrests the process of blackening, but actually bleaches the egg.

After this treatment it is an easy matter to separate the blastoderm from the yelk by needles, and the preparations thus obtained can be mounted *in toto*, or sectioned. As the blastoderm is quite thin during the cleavage stages, a whole series of these stages may be mounted and studied from the surface to advantage. After removal from the acid the preparations may be stained at once, and then treated with alcohol and mounted in balsam.

MOTOR NERVE ENDINGS.—Ciaccio[1] has investigated the motor nerve-plates in the depressor muscle of the jaws of *Torpedo marmorata* by treatment with double *chloride of gold and cadmium.* From the anterior third of the muscles, strips one millimeter thick were cut with scissors, the strips were then left for five minutes in fresh filtered lemon juice, washed in distilled water

[1] Arch. Ital. Biol., III, 75.

and placed for half an hour in one per cent solution of gold and cadmium, being kept dark; washed again in one per cent aqueous solution of formic acid, in which they were left twelve hours in the dark, then twelve in the light; finally kept in the dark in stronger formic acid for one day and preserved in glycerine. The fibers of such strips may easily be dissociated.

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SCIENTIFIC NEWS.

— A review in the *Nation* of Bentham and Hooker's Genera of Plants, says:

"Some idea of the progressive enlargement of the field may be had by a comparison of the number of genera characterized in these successive works. The phænerogamous genera of

Linnæus,	Gen. Pl. ed. 1,	A. D. 1737,	were	887
"	" ed. 6,	A. D. 1764,	"	1189
Jussieu,	"	A. D. 1789,	"	1707
Endlicher,	"	A. D. 1843,	" about	6400
Bentham and Hooker,	"	A. D. 1883,	"	7585

"If the last had been elaborated upon the scale of Endlicher, or with the idea of genera which is still common if not prevalent, the number of genera would have amounted to at least ten thousand. An estimate of the number of known species of each genus and higher group has been made throughout the work—a rough approximation only, mentioning first the number in the books, and the number to which, in the opinion of the authors, these may probably be reduced by botanists who adhere to the Linnæan view of species; from which it appears that upon the very strictest estimate their number, as now known to botanists, is at least 95,620. In round numbers it may fairly be said that about 100,000 species of phænogamous plants are in the hands of botanists. The five largest orders, as well for genera as for species, are the following, and in this rank: Compositæ, Leguminosæ, Orchideæ, Rubiaceæ, Gramineæ. The high standing of the orchid family in the list, will be a surprise to many. Linnæus knew only a hundred species; five thousand is now a moderate estimate—about half as many as there are of Compositæ, which hold to their proportion of one-tenth of the whole. In both families every country and district is largely peculiar in its species and types. The far greater prominence of Compositæ over orchids is owing to the vast number of individuals in the former, their paucity in the latter."

— The British Association for the Advancement of Science elected Lord Rauleigh president of the association for 1884. Among the vice-presidents elected are the Marquis of Lorne, the Marquis of Lansdowne, Sir John A. Macdonald, Sir Charles Tupper, Sir Alexander Galt, the Right Hon. Lyon Playfair, Dr. Charles William Siemens and Professor Huxley. The date of the